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BFSS Students 09/16 - 12/16

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Introduction

What are lionfish?

Lionfish are an extremely invasive species of fish that have recently made their way to the Caribbean. There are several theories of how they were first introduced to their non-native waters. A leading theory is that they were released accidentally from an aquarium in Florida during a hurricane, but it's obviously hard to identify the exact cause. If you're interested, there's more info online that goes further into the subject. However it happened, in only a few short years, their numbers have exploded all along the eastern United States. Florida is currently dealing with a severe infestation that is devastating their local reefs. Check out "Lionfish Airplane" on Youtube for an idea of how bad it can get. Having only made their way to the Caribbean recently, it isn't that bad here yet but being proactive and stopping the problem before it starts is really important to avoid a similar situation.

What do they look like?

Lionfish are a striped red, black, and white reef fish pictured to the right. They can be anywhere from the size of a deck cards all the way up to a bowling ball, though these are very rare. Regardless of size, venomous spines line the top, bottom, and sides of each fish. 13 of these spines hide razor sharp hypodermic needles containing protein based non-lethal, though painful, venom. DON'T PANIC. If you're safe, it's almost impossible to get stuck. I'll go more into that later.



Why are they so invasive and why is it bad?

Like many invasive species, their success is primarily due to their rapid reproduction and natural suitability to their new home. An adult female Lionfish is able to lay an estimated TWO MILLION eggs a year... pretty crazy. Also, in their new habitat they have no natural predators. That means a staggering amount of those babies reach maturity and go on to lay their own eggs. This poses a serious threat to reef fish populations. Lionfish have a huge appetite for fish fry – their main food source – and it's not uncommon to find over twenty in one adult's stomach. Within years or even months, entire species can be wiped out.

What can we do?

It turns out Lionfish actually taste incredible and are extremely easy to catch and that might be what saves the reef. The meat is white, delicate, and often compared to snapper or grouper. However, unlike many fish served in restaurants, they're a reef friendly food source. Because of this, there are initiatives in many affected areas, including Barbados, to convince local restaurants to sell Lionfish dishes apposed to other indigenous species in an effort to create a demand for their meat. This would encourage local fisherman to hunt for lionfish rather than species crucial for healthy marine ecosystems. After a couple months of collecting, our class was able to have a big Lionfish Taco dinner for everyone and it was insanely good! I'll put the recipe we used later in the document, but first I'll go through how to catch and clean the fish and be safe while doing it.

What you will need:

1. Snorkeling Gear
2. Spear with rubber band
3. Five Gallon Bucket
4. Scissors *
5. Knife for filleting *

* See Cleaning/Filleting (pg. 12)



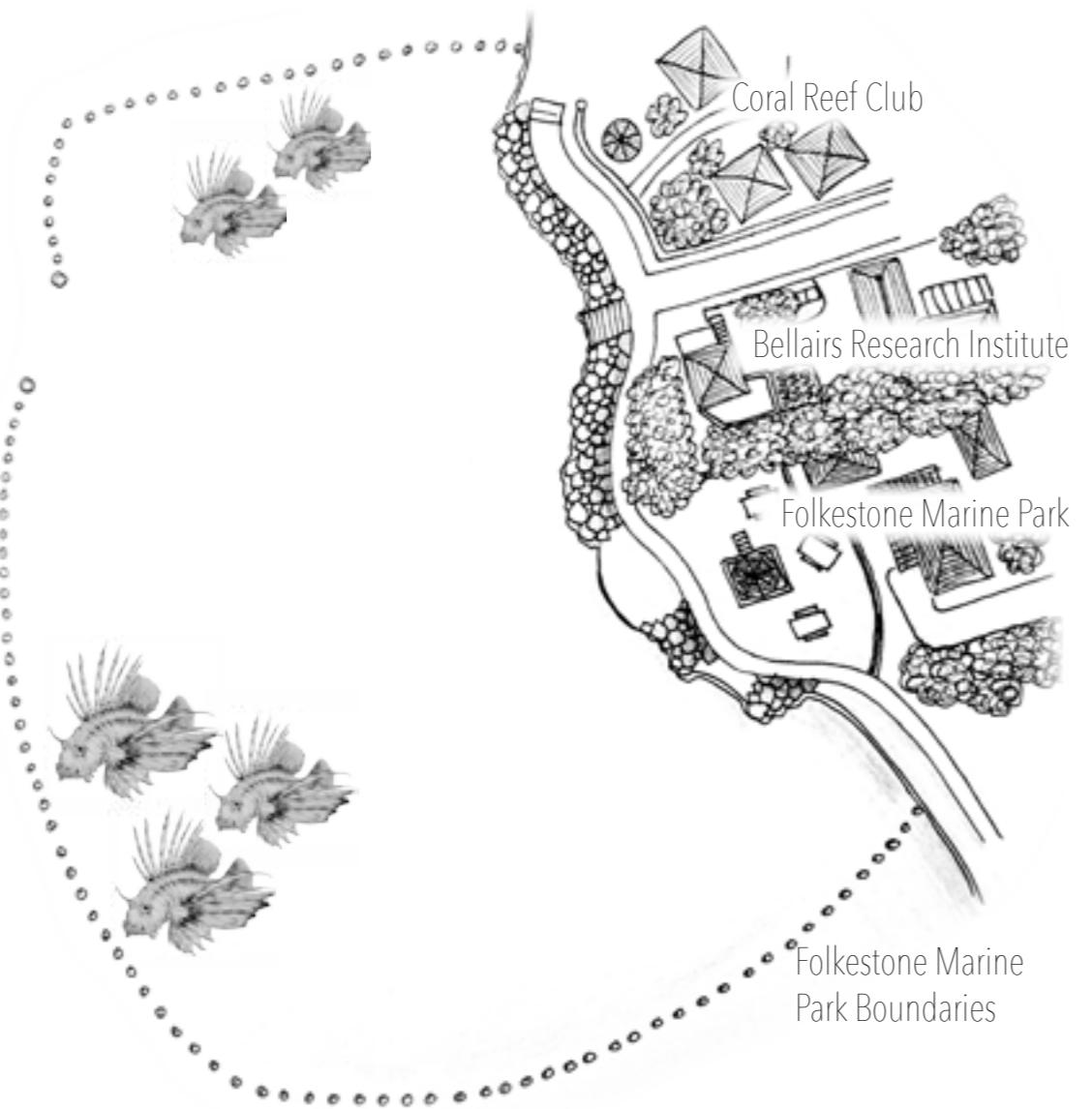
For replacements for broken or missing parts, visit
the following stores:

*Fisherman's Corner, Bridgetown (rubberband for spear)
C&I Hardware Ltd., Holetown (5 gallon bucket, scissors,
cheap knives)*

For gear, I've left behind my spear and bucket so hopefully you won't have to buy too much new stuff. Fingers crossed they are still intact when you arrive, but if not you may have to grab a few things. The rubber band on the spear should be good, but if the elastic band on the spear is broken or breaks during the semester, you will need to replace it. There's a store in Bridgetown called Fisherman's Corner that carries inexpensive replacements. Additionally, if the bucket gets broken or misplaced it is really easy to make your own DIY "zookeeper". Just get a normal 5 gallon plastic bucket (the hardware store in Holetown has them) and cut an "X" in the top of the lid. This allows you to slide the fish into the bucket and then pull the spear back out leaving the fish inside. I also cut several small holes in the bottom of the bucket to help drain the water out once you're back on the beach. That's how I made it, but I'm sure there are better ways to do it so experiment around and see if you find a better way. Once you've got the bucket, the spear, and your snorkeling gear; you are ready to Lionfish!

HOW TO FIND THEM

We've found Lionfish all over the reef outside Bellairs, at all times of day, but we found the best time for sightings is closer to sunset between 4 and 6pm. Lionfish are nocturnal and come out to feed as it gets darker so they are more likely to venture away from their hiding places making them easier to spot. Looking out from the beach, the right side of the marine park tends to be shallower and therefore easier to spot, dive down, and spear the fish. They hang out under overhangs but can also be spotted in groups around holes in the reef or even on top of the coral (especially closer to dark). The far left side of the reef towards the edge of the park gets pretty deep and is more difficult to reach and spot the fish. However, there tend to be more Lionfish and the ones you do find are generally bigger than the ones on the right. By the end of the semester, it became my favorite spot to go. With a little free diving practice you'll be able to get down there no problem.



How To Find Them

IN THE WATER

When you actually go out, one person will hold the bucket and one person will hold the spear. If you're going by yourself it's a good idea to go with just the spear and swim to shore with each fish you catch. The spear and the bucket can be a lot to deal with for one person but that's just my opinion. The fish themselves are really easy to spear once you find them.

Breathing

Once you've spotted the fish and have the spear in hand, start by floating above the fish for a few moments taking deep breaths using your diaphragm. The pattern I was told by someone who free dives competitively was 5 seconds inhale, hold for 2, exhale for 10, hold for 2, and repeat. He said that you do that breathing pattern for double the amount of time you want to be down i.e. 1 minute underwater equals 2 minutes of that breathing pattern. Once you've oxygenated your blood take your final breath by filling your stomach, then your chest, then lifting your shoulders, then neck. Again, this is all stuff he told me but you might find it unnecessary especially on the shallower right side of the reef. I highly encourage at least trying it though. You'll be amazed how much longer you can be underwater by simply changing the way you breath beforehand.

Loading the Spear

To load the spear put the band between your pointer and thumb and stretch the rubberband until your hand with the rubberband is close to the top of the spear. Loading the spear can be done either above or below water, but I always found it easier to prepare it above, that way I don't have to mess with it while focusing on the fish. Either way works, just do whatever feels more comfortable.

Diving

After taking your last breath, roll forward in the water and straighten your body when facing downward. This will cause your whole body to dip below the surface and your fins to touch the water. I was told this uses the least energy/oxygen when beginning your descent. Again, this might

be unnecessary for the more shallow dives. However, while diving down you absolutely need to equalize your ears. I didn't for a long time and my ears would kill the next day. The most popular way is to plug your nose and gently push like you would when popping your ears on a plane. You should do this every few feet that you descend before pain and discomfort starts.

Shooting

Once you're underwater, you can bring the spear tip within inches of the fish without them moving so don't shoot until very close! One cool tip I was told was to point the tip towards their head so that even if they dart, you will still hit them in the body. Releasing your grip will cause the spear to shoot in whatever direction you've got it aimed so when you're ready, let it rip. If it all went right, you'll have just speared one! Once they're on the spear, immediately tilt the shaft upwards so they don't fall or wiggle off. During this part, make sure to keep the spear far away from your body so you don't accidentally poke yourself with the fish. Once you're above water, put the fish and tip of the spear through the top of the bucket while a friend holds it steady using the sides for grip. Don't hold near the top or bottom as errant spikes can come through. Once in, slowly pull the spear out leaving the fish in. And that's it! If you do miss, don't worry, Lionfish don't usually move far after a missed attempt so you will generally have a couple tries at each one before they dive deep into a hole in the coral. It's important to mention that Lionfish are extremely resilient so don't be surprised when you get back to shore and most if not all of the fish in the bucket are still very much alive. So make sure to keep fingers away from all openings including the top and the bottom at all times. This next point is not for the squeamish, but very important. No animal should be made to suffer and it's your duty to keep their suffering to a minimum and kill them as humanely and quickly as possible. I found opening the bucket and using the spear to stab them in the brain, located behind and up from the eye to be the best method. Looking at a diagram of Lionfish online may be helpful in doing this.

In The Water



Safety

You need to be very careful while doing all of this because the spines along the back, sides, and bottom have a protein based venom that hurts like a mother#\$@%&!. Seriously, try your best to not get stung. It isn't deadly; it will just ruin your day. If you DO get stung, use the hottest water you can stand on the sting. Hot water will cause the venom to coagulate and counteract the painful side effects. That being said, NO ONE our year got stung while spearfishing or cleaning the fish. You just have to be careful. Also it goes without saying that you'll be handling a spear so be careful with that. Don't point the tip at anyone when loaded, careful while swimming, etc., common sense stuff.



Cleaning/Fileting

There are tons of "How to Filet Lionfish" videos online and they're all good, it just comes down to personal preference. However, the one thing you absolutely need to do before fileting the fish is to remove the spines. The venom is still active while dead and careless cleaning of the fish is how most people get stuck. Use sturdy scissors, making sure to cut at the base, to remove all of the spines along all sides of the fish. Move these away from the area you will be filleting on so that you don't accidentally stick yourself while cleaning the fish. We had one very close call when we forgot to move the spikes so trust me, move them before you start. Once these are disposed of, the fish is totally harmless and all you have to do is filet. It would also be a good idea to look up how to avoid freezer burn if you plan on saving the filets. We used zip-lock airlock bags that come with a pump we found at the grocery store that removes excess air and they worked great, but there are tons of ways to do it.



LIONFISH TACOS WITH MANGO PINEAPPLE SALSA AND A PURPLE CABBAGE COLESLAW

INGREDIENTS

**SERVES APPROXIMATELY 20
(2-3 TACOS PER PERSON)**

3 freezer bags filled with fileted lionfish
blackening bajan fish seasoning

1 pineapple
2 cans chunked pineapple
8 mangos
3 red onions
16 medium sized tomatoes
1 batch of parsley (or cilantro)

50 small tortillas

4 large carrots
6 bags of shredded purple cabbage

olive oil
lime juice
chipotle aioli
salt
pepper

PREPARATION

Cut mangoes and pineapple into small cubes (no larger than 1cm x 1cm) and add to a large bowl. Dice red onions and tomatoes into similar sized pieces and add to bowl. Strain the juice from two cans of pineapple and add to salsa for extra sweetness. Finish with lime juice, salt, pepper and freshly chopped parsley or cilantro.

Prepare a coleslaw sauce by watering down store bought chipotle aioli with lime juice and water in a bowl. Continue this until your sauce reaches a nice consistency and there is enough to stir in the veggie ingredients. Chop cabbage (if not already pre-chopped), grate carrots and add to a large bowl. Add leftover red onion that was used for the mango salsa if desired. Stir in coleslaw sauce and add salt, pepper and freshly chopped parsley or cilantro to taste.

Lionfish should be fileted after being speared and stored in freezer bags. Before making lionfish tacos, the pre-fileted fish should be placed in the fridge the morning of preparation to properly defrost. Before cooking, pin bones must be removed by using sterilized tweezers. Feel along the pieces of fish for bones and gently remove with tweezers. Place de-boned pieces onto a plate for seasoning.

Toss the de-boned pieces of lionfish in a plate of Bajan fish seasoning to prepare for cooking. On a non-stick pan, add olive oil and turn stovetop to medium-low heat. Add a few pieces of seasoned fish to the pan. Cook for 1-2 minutes on one side and then flip and cook for the same amount of time on the other side (cooking time depends on the thickness of the pieces of fish). In between adding new pieces of fish to the pan, clear burnt residue and add additional olive oil to avoid burning the fish.

To serve, spread a small amount of chipotle aioli onto a tortilla then proceed to add cooked lionfish, mango salsa, and coleslaw. Tastes great with a side of coconut lime rice and a boozy beverage... Enjoy!

Recipe